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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,487	03/31/2004	Katrina Mikhaylichenko	LAM2P451	1220
25920 7590 03/23/2007 MARTINE PENILLA & GENCARELLA, LLP 710 LAKEWAY DRIVE SUITE 200 SUNNYVALE, CA 94085			EXAMINER MACARTHUR, SYLVIA	
			ART UNIT	PAPER NUMBER
			1763	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/23/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/816,487

Applicant(s)

MIKHAYLICHENKO ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-14, 16-19 and 21 is/are rejected.
- 7) ☒ Claim(s) 15 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 11/26/2006 have been fully considered but they are not persuasive. Applicant argues that the prior art of Mertens et al (WO 99/16109) fails to teach using a heater is a fluid supply means reciting on pages 5 and 6. The examiner disagrees in that a heat source (heater) is illustrated in Fig.1 as a element number 4. Note also in page 4 lines 5-17 the heater/nozzle is further discussed. Page 11 lines 12-27 teaches the use of simple heater equipped with a thermocouple-thermometer (sensor). Mertens also teach the creation of a liquid meniscus in the paragraph adjoining pages 3 and 4.

### ***Double Patenting***

2. Claims 10, 16, 17, and 21 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 15-20 of copending Application No. 11/061,944 (USPub No. 2002/0124153) held to Yun et al in view of Mertens et al (WO 99/16109) and de Larios et al (US 6,488, 040). Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the present invention is narrower than the application by Yun et al.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Yun et al teaches a proximity head connected to a fluid source wherein the head further includes a heating element, see claims 15 and 17 of the co-pending application.

Regarding claim 10: Yun et al fails to teach a sensor.

Mertens et al teaches a proximity head with a heat source 4. According to page 11 lines 13-19 the heater is equipped with a thermocouple-thermometer ( temperature sensor).

The motivation to provide the proximity head of Yun et al with a thermocouple as taught by Mertens et al is that the temperature of the processing fluid is an important processing parameter that when monitored can improve the processing result. Thus, it would have been obvious to modify the proximity head of Yun et al to include a heater with a temperature sensor.

Yun et al as modified by Mertens further fails to claim the inlets/outlets as recited in claim 10.

De Larios et al teaches capillary proximity heads. The proximity head having inlets and outlets as illustrated in Figs 6-8. The motivation to use the proximity head of de Larios in the apparatus of Yun et al in view of Mertens et al is that it provides a means of cleaning and drying a wafer simultaneously as recited by the title and in col. 4 lines 31-45. Thus, it would have been obvious for one ordinary skill in the art at the time of the claimed invention to combine the teachings of Yun et al, Mertens al and de Larios to provide a capillary proximity heater with a heater/temperature sensor component in the head.

Regarding claims 16 and 21: The thermocouple/thermometer of Mertens comprises a controller as a part of its structure and function of detecting the temperature.

Regarding claim 17: The apparatus of Yun et al comprises a fluid source, a proximity head with a heater, a first member manipulating the proximity head and a second member that manipulates the wafer support, see claims 15-17 of Yun et al.

3. Claims 11-14, 18, and 19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 15-20 of copending

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Application No. 11/061,944 held to Yun et al in view of Mertens et al and De Larios as applied to claims 10, 16, 17, and 21 above, in further view of Kawamura et al (US 5,696,348).

The teachings of Yun et al in view of Mertens et al and de Larios et al were discussed above.

Yun et al in view of Mertens fails to teach the material of construction of the heater with a thermocouple/thermometer.

Kawamura et al teaches a thermocouple constructed of a protective pipe made of SiC see col. 2 lines 65. The motivation to use SiC as the material of construction is that is a known heat resistant ceramic material. Kawamura et al further teaches the thermocouple comprises wires, see the abstract. These wires are for coupling to a power supply see col.3 lines 38-40. In order to be used to conduct electricity the wires are obviously made of an electrically conductive material. Thus, it would have been obvious to construct the heater/temperature sensor of the materials taught by Kawamura et al with wires and a protective coating to provide electricity to the heater/sensor while protecting it from the harsh physical/chemical environment of the semiconductor manufacturing system.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10, 16, 17, and 21 are rejected under 35 U.S.C. 103(a) as being obvious over Yun et al (US Pub No. 2006/0124153) in view of Mertens et al (WO 99/16109).

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The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claim 10: Yun et al teaches a proximity head connected to a fluid source wherein the head further includes a heating element, see claims 15 and 17 of the co-pending application. Fig. 4B of Yun et al illustrates the proximity head comprises inlets/outlets as recited in the present invention. Section [0046] of Yun et al further teaches a heating element within the proximity head.

Yun et al fails to teach a sensor.

Mertens et al teaches a proximity head with a heat source 4. According to page 11 lines 13-19 the heater is equipped with a thermocouple-thermometer ( temperature sensor).

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The motivation to provide the proximity head of Yun et al with a thermocouple as taught by Mertens et al is that the temperature of the processing fluid is an important processing parameter that when monitored can improve the processing result. Thus, it would have been obvious to modify the proximity head of Yun et al to include a heater with a temperature sensor. Regarding claims 16 and 21: The thermocouple/thermometer of Mertens comprises a controller as a part of its structure and function of detecting the temperature.

Regarding claim 17: The apparatus of Yun et al comprises a fluid source, a proximity head with a heater, a first member manipulating the proximity head and a second member that manipulates the wafer support, see claims 15-17 of Yun et al.

6. Claims 10, 16, 17, and 21 are rejected under 35 U.S.C. 103(a) as being obvious over de Larios et al US 6,488,040 in view of Mertens et al (WO 99/16109).

De Larios et al teaches capillary proximity heads. The proximity head having inlets and outlets as illustrated in Figs 6-8.

Re claim 10: DeLarios fails to teach the proximity head comprises a heating portion.

Mertens et al teaches a proximity head with a heat source 4. According to page 11 lines 13-19 the heater is equipped with a thermocouple-thermometer ( temperature sensor).

The motivation to use the heating portion/temperature thermometer of Mertens et al in the proximity head of de Larios is that the temperature of the processing fluid is an important processing parameter that when monitored can improve the processing result. Thus, it would have been obvious to modify the proximity head of de Larios et al to include a heater with a temperature sensor.

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Regarding claims 16 and 21: The thermocouple/thermometer of Mertens comprises a controller as a part of its structure and function of detecting the temperature.

Regarding claim 17: The apparatus of Yun et al comprises a fluid source, a proximity head with a heater, a first member manipulating the proximity head and a second member that manipulates the wafer support, see claims 15-17 of Yun et al.

7. Claims 11-14, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun et al or deLarios in view of Mertens et al as applied in claims 10, 16, 17, and 21 above, in view of Kawamura et al.

The teachings of Yun et al or de Larios in view of Mertens et al were discussed above.

Either modification fails to teach the material of construction of the heater with a thermocouple/thermometer.

Kawamura et al teaches a thermocouple constructed of a protective pipe made of SiC see col. 2 lines 65. The motivation to use SiC as the material of construction is that is a known heat resistant ceramic material. Kawamura et al further teaches the thermocouple comprises wires, see the abstract. These wires are for coupling to a power supply see col.3 lines 38-40. In order to be used to conduct electricity the wires are obviously made of an electrically conductive material. Thus, it would have been obvious to construct the heater/temperature sensor of the materials taught by Kawamura et al with wires and a protective coating to provide electricity to the heater/sensor while protecting it from the harsh physical and chemical environment of the semiconductor manufacturing system.

***Allowable Subject Matter***



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8. Claims 15 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fails to teach or fairly suggest a proximity head with a heating portion with the first and second channels as recited in the present invention.

### *Conclusion*


9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. The amendment reciting the liquid meniscus suggests capillary action. The introduction of the prior art of de Larios et al was necessitated by the amendment. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

March 19, 2007